

CLAIMS

1. An apparatus comprising:

a circuit configured to (i) generate an output having a frequency and (ii) adjust said frequency in response to a measured duration of a known time interval associated with an input data stream.

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2. The apparatus according to claim 1, wherein said input is a data stream comprising one or more of said time intervals.

3. The apparatus according to claim 2, wherein said time intervals are delimited by periodic events in said data stream.

4. The apparatus according to claim 3, wherein said events comprise start-of-frame (SOF) packets of the Universal Serial Bus protocol.

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5. The apparatus according to claim 1, wherein said frequency is adjusted to within 0.25% of a host data rate.

6. The apparatus according to claim 1, wherein said circuit comprises a calibration circuit and an oscillator circuit.

7. The apparatus according to claim 6, wherein said oscillator is digitally tunable.

8. The apparatus according to claim 6, wherein said calibration circuit comprises a detector circuit.

9. The apparatus according to claim 8, wherein said detector circuit is configured to detect a SOF packet.

10. The apparatus according to claim 6, wherein said calibration circuit comprises one or more counters.

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11. The apparatus according to claim 10, wherein said counters are configured to start counting in response to a first SOF packet and stop counting in response to a second SOF packet.

12. The apparatus according to claim 10, wherein said counters are configured to count in response to said output.

13. The apparatus according to claim 6, wherein said calibration circuit comprises a look-up table.

14. The apparatus according to claim 13, wherein said look-up table contains a number of values for adjusting said frequency.

15. An apparatus comprising:
means for generating an output having a frequency;
means for measuring a known time interval of an input using said output; and
5 means for adjusting said generating means in response to said measurement.

16. A method for providing a precise clock using a precisely known time interval having a known precise duration of a data stream comprising the steps of:

(A) measuring the known time interval using said clock;

5 and

(B) adjusting said clock in response to a difference between said measurement and said known duration.

17. The method according to claim 16, wherein said time interval comprises the time between a pair of SOF packets.

18. The method according to claim 16, wherein the step A comprises the sub-steps of:

(A-1) starting a counter in response to a first event that starts said known time interval;

5 (A-2) counting in response to said clock; and

(A-3) stopping said counter in response to a second event that ends said known time interval.

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19. The method according to claim 16, wherein the step B comprises the sub-steps of:

(B-1) comparing a measurement of said known time interval with the known duration of said known time interval;

5 (B-2) retrieving a correction value from a look-up table addressed using a difference between said measurement and said known duration; and

(B-3) presenting said correction value to a digitally tunable oscillator.

20. The method according to claim 16, wherein the step B comprises the sub-steps of:

(B-1) starting a counter in response to a first event that starts said known time interval;

5 (B-2) computing a correction value using said difference between said measurement and said known duration; and

(B-3) presenting said correction value to a digitally tunable oscillator.